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| Notice of Allowability | Application No. | Applicant(s) | |
| | 10/072,953 | TOKUDA ET AL. | |
| | Examiner | Art Unit | |
| | Eunice Ng | 2626 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment filed April 28, 2006.
2. ☒ The allowed claim(s) is/are 11-17.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. <input type="checkbox"/> Notice of References Cited (PTO-892) 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____ 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material | <ol style="list-style-type: none"> 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) 6. <input type="checkbox"/> Interview Summary (PTO-413), Paper No./Mail Date _____. 7. <input type="checkbox"/> Examiner's Amendment/Comment 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance 9. <input type="checkbox"/> Other _____. |
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DETAILED ACTION

Allowable Subject Matter

1. Claims 11-17 are allowed.
2. The following is an examiner's statement of reasons for allowance:

Claim 11 includes limitations that have been found to be the same as or similar to that of prior art, but also contains further limitations for which no prior art has been found which reads on or suggests what is claimed.

Hargrave, III *et al.* disclose a method of setting up and using a computer-assisted memory translation scheme for translating a sentence between a source language and a target language (see column 1, lines 11-14 and column 5, lines 11-16) comprising the steps of:

setting up a translation memory system (see column 4, lines 56-57) with a plurality of templates (see Table 4 in column 11, representing the data included in each text segment vector (an n-gram or word along with weight values) which "may be organized in database files in any convenient manner," synonymous with a template database); and

performing a translation process using said translation memory system and a determination of common subsequences between the sentence and the plurality of templates (see lines 2-7 in column 5, describing the use of a similarity function for the vectors associated with a source language text string and target language text string, which generates a ranking of possible matches for the most similar text segments);

Hargrave, III *et al.* fail to teach using reduced latent semantic vector space. However, this is well known in the art as evidenced by Landauer *et al.*, which disclose a computer

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information retrieval using latent semantic structure comprising: using reduced latent semantic vector space (see lines 4-7 of column 7 and lines 58-60 of column 14, describing the method of decomposing a matrix into reduced singular value representation (which is characterized by reduced latent semantic space) composed of a distinct term file and a data object file (synonymous to a source language template and a target language template) to create a reduced latent semantic vector space);

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teaching elements of Hargrave, III *et al.* with Landauer *et al.* Motivation for the combination is to provide a machine assisted translation tool between two different languages with a faster matching procedure by using vector-based retrieval (see column 5, lines 7-9 of Hargrave, III *et al.*); using the technique of latent semantic space to represent documents as sets of words represents them as parameters in such a way that dependencies between words are taken into account (see column 1, lines 49-52 of Landauer *et al.*), and reducing the dimension of the latent vector semantic space has the advantageous property that small sources of variability in term usage are dropped and only the most important sources kept (see column 2, lines 27-30 of Landauer *et al.*).

Hargrave, III *et al.* also disclose said step of performing a translation process including: finding a subset of templates having closest similarity to the sentence based on a similarity measurement of the reduced latent semantic vector space (see lines 2-7 in column 5, describing the use of a similarity function for the vectors associated with a source language text string and target language text string, which generates a ranking of possible matches for the most similar text segments);

selecting, from said subset, a set of items having a heaviest weighted common subsequence between said sentence and said subset of templates (see column 14, lines 9-15, which describes grouping text segments having the highest score and sorted so that the most similar documents are retrieved first, synonymous with the idea of selecting, from a subset, a set of items having a heaviest weighted common subsequence after ranking); and

selecting, from the set of items, a template closest to said sentence as a sentence translation (see column 14, lines 16-18, describing a score given to the degree of matching between a query vector and a text segment vector, synonymous to a source language template and a target language template, for the purpose of selecting the template closest to the translation).

Hargrave, III and Landauer do not, but Kuno *et al.* teaches said step of selecting a template including:

choosing a syntactically valid path in a target language template (col. 14, lines 20-30 show determining “acceptable” and “unacceptable” sentence constructions, synonymous to the idea of choosing a syntactically valid path).

However, none of Hargrave, III, Landauer, or Kuno *et al.*, the closest prior art found, teach, or suggest the steps of:

registering the sentence into source language template, t , by combining each pair of matched terms into a proper template node to obtain a new source language template structure t_x ;

if the path chosen is a correct translation of the sentence, editing template t_x so that each path of template t_x represents a correct sentence having a same meaning as the sentence, and replacing the template t in the database with the new template t_x ; and

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if the path chosen is not a correct translation of the sentence, obtaining a new target language template structure t_y so that each path of t_y is a correct translation of the sentence, editing t_x so that each path of t_x represents a correct sentence having a same meaning as the sentence, and adding together t_y and t_x and inserting the sum as a new item in the database.

Claims 12-17 further limit claim 11, above, and thus contain allowable subject matter.

3. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eunice Ng whose telephone number is 571-272-2854. The examiner can normally be reached on Monday through Friday, 8:30 a.m. - 5:00 p.m.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on 571-272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

EN

May 26, 2006



TĀLIVALDIS IVARS ŠMITS
PRIMARY EXAMINER